

Argument Structure in Nominalizations: The Case of the Light Verb Construction in German

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1 The Phenomenon: Light Verb Constructions in German

The predicate associated with the verb fails to express its full argument structure, while the predicate associated with the nominalization preserves its original argument structure.

- (1) Paul hält ein Referat ≈ Paul referiert über X.
Paul holds a presentation ≈ Paul presents_{prap}X.
- (2) Paul hält ein Kleinkind ≠ *Paul kleinkindert.
Paul holds a baby ≠ *Paul babi-es.

phrase structure in both examples: [DP [_{VP} V DP]]
semantic roles: (2) Paul <agent>, Kleinkind <patient>
(1) Paul <agent>, Referat <patient>

Proposal:

Argument Sharing is the **integration** of verbal predicate's and nominal's arguments.

Hypothesis:

Argument Sharing is **purely semantic** and **strictly compositional**.

2 Experimental Triads

2.1 Example Triad:

(3) LIGHT condition:

Weil der Student seiner Kommilitonin vor dem Seminar **eine Zusammenfassung gab**, spendierte sie ihm letzte Woche einen Kaffee.

Because the student **gave an abstract** to his fellow student before class, she bought him coffee last week.

(4) HEAVY condition:

Weil der Student seiner Kommilitonin vor dem Seminar **eine Zusammenfassung abschrieb**, spendierte sie ihm letzte Woche einen Kaffee.

Because the student **copied an abstract** to his fellow student before class, she bought him coffee last week.

(5) DARK condition:

Weil der Student seiner Kommilitonin vor dem Seminar **einen Kugelschreiber gab**, spendierte sie ihm letzte Woche einen Kaffee.

Because the student **gave a pen** to his fellow student before class, she bought him coffee last week.

2.2 Properties:

- possibility of passivization, adjectival or adverbial modification, fronting, no restrictions in choice of article → no lexicalization or idiomization (cf. Helbig & Buscha (2001))
- same syntax in all three conditions
- same lexical items in all three conditions except for the critical area
- in the LIGHT condition, Argument Sharing is triggered, whereas in the HEAVY and DARK condition, argument structure comes from the verb alone.

3 Approach: Real-Time Comprehension

Predictions:

If Argument Sharing is **compositional** → **more computationally costly**
If Argument Sharing is **purely semantic** → **cost is delayed**

4 Preparatory Tests

4.1 Corpus Analysis (COSMAS II)

- goal: prevention of frequency effects
- results:
 - Nominals → Numerical frequency and sense frequency:
Mean_{LIGHT/HEAVY}=1441, Mean_{DARK}=282
 - Verbs → Sense frequency:
Mean_{LIGHT}= 127, Mean_{DARK}= 20.3
 - Verb-Nominal Co-occurrence frequency:
Mean_{LVC}= 51, Mean_{DARK/HEAVY}= .02

Implication:

The LIGHT Condition is less costly than HEAVY or DARK, due to frequency.

If the opposite was to be found, it could not be due to any frequency effect.

4.2 Isolated Reaction Time Test: Auditory Lexical Decision Task

- 214 words (half of them German words, half of them possible German nonwords)
- reaction time for the lexical decision was measured *from onset of the word*.
- matching of nouns and verbs for similar isolated reaction times throughout conditions.
- frequencies and reaction times *did not correlate* (objects: Pearson correlation = 0,116 (p= 0,321); verbs: Pearson correlation = 0,119 (p=0,311)).

5 Main Experiment: Cross-Modal Lexical Decision Task

5.1 Experimental Design:

- 25 experimental triads like (3)-(5), matched with semantically unrelated probes
- 175 filler sentences; 50 of them matched with semantically unrelated word probes; 125 of them matched with semantically unrelated nonword probes
- 20 comprehension questions (to ensure subjects' attention)
- subjects: 44 German native speakers between the ages of 18 and 35

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- two semi-randomized scripts; six experimental lists of probe-condition matching to avoid any priming effects
- Probing Comprehension:
Licensing Position (°): where argument sharing is triggered.
LC+300 Position (°): where argument sharing is predicted to be fully implemented.
Example:

Weil der Student seiner Kommilitonin vor dem Seminar...

...eine Zusammenfassung gab ° spendierte sie ihm°°...

...eine Zusammenfassung abschrieb ° spendierte sie ihm°°...

...einen Kugelschreiber gab ° spendierte sie ihm°°...

...letzte Woche einen Kaffee.

6 Results:

Comparison at each probe position:

Licensing Position (LC): LIGHT = DARK = HEAVY

$F(34)=11,61$; $p_{HEAVY}=.654$; $p_{DARK}=.698$

LC+ 300 msec: LIGHT >> DARK/HEAVY

$F(34)=7,15$; $p_{HEAVY}=.015$; $p_{DARK}=.013$

Position x Condition

interaction was significant but only at the LC300 for the light condition in the predicted direction:

$LIGHT_{LC+300} >> LIGHT_{LC}$

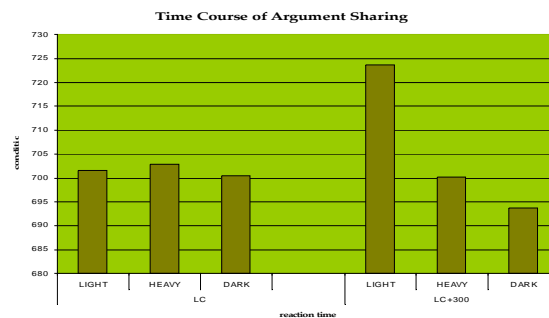
$F(40)=6,86$; $p_{LIGHT+300}=.068$

$HEAVY_{LC+300} \approx HEAVY_{LC}$

$F(40)=7,12$; $p_{HEAVY+300}=.997$

$DARK_{LC+300} \approx DARK_{LC}$

$F(40)=6,61$; $p_{DARK+300}=.381$



Results:

Argument Sharing is costly.

Cost emerges 300ms after licensing. (cf. McElree & Griffith (1998))

Implication:

Argument Sharing is compositional & semantic.

The effect found here is not exclusive to German. It has also been found for English (Piñango et al. (in press)).

7 Conclusions:

Composite argument structure in light verb constructions results from a **compositional process: Argument Sharing**.

Argument Sharing is an **organizing principle** in semantic composition.

The **argument structure of a nominalization** is not only **inherited from the verbal predicate** from which the nominalization is derived, it remains fully available for **carrying out semantic composition**.

8 Selected References

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